

CLAIMS

What is claimed is:

1. A method for forming an assembly including semiconductor devices in stacked arrangement, comprising:
 - applying substantially a predetermined volume of adhesive material to an active surface of a first semiconductor device; and
 - positioning a second semiconductor device adjacent to the first semiconductor device, the adhesive material securing the second semiconductor device to the first semiconductor device and spacing a surface of the semiconductor device a predetermined distance apart from the surface of the first semiconductor device.
2. The method of claim 1, wherein the applying comprises applying the adhesive material to an active surface of the first semiconductor device over which discrete conductive elements extend.
3. The method of claim 2, wherein the positioning comprises positioning the second semiconductor device at least partially over at least one discrete conductive element of the discrete conductive elements.
4. The method of claim 3, wherein the positioning comprises placing the second semiconductor device on the discrete conductive elements.
5. The method of claim 4, wherein the applying comprises introducing the adhesive material between at least the first semiconductor device and the second semiconductor device.
6. The method of claim 5, wherein the introducing includes forcing the surface of the second semiconductor device away from at least the first semiconductor device and spacing the surface of the second semiconductor device apart from the discrete conductive elements.

7. The method of claim 5, wherein the introducing includes substantially encapsulating portions of the discrete conductive elements located over the active surface of at least the first semiconductor device.

8. The method of claim 5, further comprising:
substantially hardening the adhesive material to at least a semisolid state to space the active surface of at least the first semiconductor device substantially the predetermined distance apart from the surface of the second semiconductor device.

9. The method of claim 8, wherein the substantially hardening comprises substantially curing the adhesive material.

10. The method of claim 8, wherein the substantially hardening includes decreasing a distance the active surface of the first semiconductor device is spaced apart from the surface of the second semiconductor device from substantially a set distance to substantially the predetermined distance.

11. The method of claim 1, wherein the applying comprises applying the adhesive material to the surface of at least the first semiconductor device before the positioning.

12. The method of claim 8, further comprising, upon the positioning, using the adhesive material to draw the second semiconductor device toward at least the first semiconductor device until at least the first semiconductor device and the second semiconductor device are spaced substantially a set distance apart from one another.

13. The method of claim 1, further comprising:
substantially hardening the adhesive material to at least a semisolid state to space the surface of
at least the first semiconductor device substantially the predetermined distance apart from
the surface of the second semiconductor device.
14. The method of claim 13, wherein the substantially hardening comprises
substantially curing the adhesive material.
15. The method of claim 13, wherein the substantially hardening includes decreasing
a distance the active surface of at least the first semiconductor device is spaced apart from the
surface of the second semiconductor device from substantially a set distance to substantially the
predetermined distance.
16. A method for forming a multi-chip module, comprising:
providing a substrate including a plurality of contact areas;
establishing electrical communication between the substrate and a first semiconductor device;
applying substantially a predetermined volume of adhesive material onto at least a surface of the
first semiconductor device; and
positioning a second semiconductor device adjacent to the first semiconductor device, the
adhesive material securing the second semiconductor device to the first semiconductor
device and spacing the surface of the second semiconductor device substantially a
predetermined distance apart from the surface of the first semiconductor device.
17. The method of claim 16, wherein the applying is effected following the
establishing.
18. The method of claim 17, wherein the positioning follows the applying.
19. The method of claim 17, wherein the applying follows the positioning.

20. The method of claim 17, wherein the positioning comprises positioning the second semiconductor device over the first semiconductor device and at least partially over at least one discrete conductive element protruding above the surface of the first semiconductor device.

21. The method of claim 16, wherein the establishing electrical communication comprises:

placing discrete conductive elements between bond pads of the first semiconductor device and corresponding contact areas of the substrate to electrically connect the bond pads to the corresponding contact areas, the discrete conductive elements extending partially over the surface of the first semiconductor device.

22. The method of claim 21, wherein the placing discrete conductive elements comprises at least one of wire bonding bond pads to corresponding contact areas, tape-automated bonding bond pads to corresponding contact areas, and thermocompression bonding leads to bond pads.

23. The method of claim 21, further comprising:
encapsulating at least portions of the first semiconductor device, the second semiconductor device, the discrete conductive elements, and the substrate.

24. The method of claim 16, wherein the positioning the second semiconductor device comprises positioning the second semiconductor device onto the predetermined volume of adhesive material.

25. The method of claim 16, further comprising using the predetermined volume of adhesive material to draw the second semiconductor device toward the first semiconductor device with the second semiconductor device spaced substantially a set distance apart from the first semiconductor device.

26. The method of claim 16, wherein the introducing substantially the predetermined volume of adhesive material is effected following positioning of the second semiconductor device.

27. The method of claim 26, wherein the introducing substantially the predetermined volume of adhesive material comprises introducing adhesive material between the first semiconductor device and the second semiconductor device.

28. The method of claim 27, wherein the introducing electrically isolates discrete conductive elements protruding from the first semiconductor device from the surface of the second semiconductor device.

29. The method of claim 27, wherein the introducing pushes the second semiconductor device away from the first semiconductor device to substantially the predetermined distance.

30. The method of claim 27, wherein the introducing coats at least portions of discrete conductive elements located adjacent to the surface of the second semiconductor device.

31. The method of claim 16, further comprising:
substantially hardening the adhesive material to at least a semisolid state to space the surface of the first semiconductor device apart from the surface of the second semiconductor device by substantially the predetermined distance.

32. The method of claim 31, wherein the substantially hardening comprises substantially curing the adhesive material.

33. The method of claim 31, further comprising; decreasing a distance the surface of the first semiconductor device is spaced apart from the surface of the second semiconductor device from substantially a set distance to substantially the predetermined distance by the substantially hardening.